

FINAL REPORT - 2003

An Inventory of Wildlife at Two Constructed Wetland Sites

Submitted To:

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Research, Education and Economics

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THE WILDLIFE AND HABITAT SURVEY

The project objective was to document the species and abundance of birds, mammals, amphibians, reptiles, macroinvertebrates, microinvertebrates, fish, and aquatic arthropods inhabiting and/or utilizing the two WRSIS project constructed wetlands in Defiance and Fulton Counties, Ohio. A systematic evaluation of each created wetland was done each month on a 30 day interval. Throughout the summer of 2003, surveys were completed each month, May through September.

Special consideration was given to an inventory of the aerial invertebrates, aquatic invertebrates, benthic macroinvertebrates, bird, fish, amphibian and reptile species. The attached tables of Master species List 2003 reflects this work for each site. Additionally, this report includes a cumulative report noting wildlife and habitat changes since 1998, when the first wildlife/habitat inventory was done on these two sites.

THE UNIVERSITY PERSONNEL

Three biologists from the University of Findlay: Dr. Dwight Moody (project coordinator; entomologist), Ms. Kathy Noblet (ornithologist) and Dr. Gwynne Rife (sampling technician; macroinvertebrate specialist) developed the sampling protocol, organized and spearheaded all work done at each site.

Three undergraduates were instrumental in doing much of the sampling. These three students became much better biologists through this effort and were able to add an important component to their credentials.

SAMPLING DATES/WETLANDS

The following was the schedule and the areas worked in 2003:

May	13	Defiance County, DARA Site
	19	Fulton County, Shininger Farm
June	9	Defiance Co.
	10	Fulton Co.
July	10	Defiance Co.
	15	Fulton Co.
Aug.	7	Defiance Co.
	11	Fulton Co.
Sep.	16	Defiance Co.
	19	Fulton Co.

SAMPLING TECHNIQUES

Each month, at each site, the following was done: observations and measurements of weather and climatic influences; photography to illustrate the successional nature of the wetland; observations of mammal evidence and counting of birds; identification of amphibians and reptiles; seining and identification of fish; identification of insects and counting of damselfly/dragonfly species; collection of Hester-Dendy plates and analysis of the macroinvertebrates; analysis of samples obtained with a Peterson grab dredge and identification of the species found; and collection of microinvertebrates with zooplankton nets to determine a trophic inventory of the plankton community.

RESULTS

Please refer to Appendix I, Master species List 2003 and Appendix II, Photo Journal.

Cool, damp and windy weather conditions was only a minor problem this summer. However, the reader may observe that bird numbers and aerial insect numbers were slightly depressed on some days. Algal growth was a problem at times in both wetlands and interfered with seining and plankton net utilization.

CONCLUSIONS

Defiance

This wetland appears to be the best managed and located area. With the proximity of the woods to the west, this wetland gets an important buffer zone which contributes little run-off, but offers habitat for wildlife. Animal diversity was the greatest at this site. There was a total of 100 species found and recorded for 2003, compared to 80 species found in 1999. Because amphibian larvae, fish, aquatic molluscs, odonate and mayfly larvae are gill breathers, their level of diversity is an excellent indicator of water quality. This site offers a good number of each animal category.

The continued presence of a healthy population of the threatened Blanchard's Cricket Frog is another indicator of a fairly healthy wetland. These small amphibians appear to have definite habitat needs which are not available in most of Ohio. It is important that the Blanchard's Cricket Frog population is persisting at this site.

Fulton

It is obvious that good management practices are desired at this site, however, for two reasons this wetland will probably always be of marginal wildlife use. First, its location is very close to the agricultural fields and second, its much lower elevation relative to the agricultural fields are problematic. Field run-off leads to a highly eutrophic condition which appears to be a limiting factor in development of a good macrobiotic food base. Much of the benthic zone is already septic and as the algal growth, death and decay continues, the rest of the benthos may become septic. However, it does offer some potential as an excellent wetland. In 2003, there was a total of 85 species found and recorded, compared to 75 species found in 1999.

SUMMARY CONTRAST BETWEEN SITES

The Defiance site produced: 19 species of (dragonflies and damselflies) Odonata, 6 species of Mollusca, 2 species of (mayflies) Ephemeroptera, 5 species of Amphibia, and 3 species of (fish) Osteichthyes. The Fulton site produced: 13 species of Odonata, 3 species of Mollusca, 0 species of Ephemeroptera, 2 species of Amphibia, and 2 species of Osteichthyes.

SIMILARITY BETWEEN SITES

The lack of dipteran (flies, mosquitoes, etc.) diversity and the greater diversity of coleopterans (beetles) and odonate species, indicates a littoral macroinvertebrate or pond community rather than a classical wetland community (see Appendix III, Draft: Biosurvey of Northwest Ohio Created Wetlands Systems, the Abstract). The impoundments at both sites are, however, certainly offering aquatic habitats for a variety of wildlife organisms.

WILDLIFE AND HABITAT CHANGES SINCE 1999

The total number of invertebrate and vertebrate animals in 1999 for Defiance was 80 and Fulton was 75, for 2003 it was 100 and 85 respectively.

In 1999, the Defiance wetland produced 16 odonate species and Fulton produced 13, while in 2003 there were 19 and 13 respectively.

Defiance produced only 2 species of molluscs while Fulton had 6 species in 1999. In 2003 there were 6 molluscan species found in Defiance and only 3 in Fulton.

The mayflies found in Defiance for 1999 totaled 3 species and Fulton totaled 2, in 2003 there were 2 species compared to 0 for Fulton.

There were 4 amphibian species found in Defiance in 1999 and 1 species found in Fulton. In 2003, 5 amphibian species were found in Defiance and 2 species in Fulton.

There were no fish species found either year, 1998 or 1999 in Defiance and 3 species found in 2003. Fulton produced 2 species in 1999, and the same two found in 2003.

The Fulton wetland site has changed little physically from 1999 to 2003. The agricultural field is still very close to the pond and the littoral zone is still without noticeable wetland vegetation. Defiance, however, has changed physically (see Appendix II, Photojournal). Since 1998, cattails increased their encroachment into the pond and surround an even greater marginal area of the pond. Even though there is a wider grass buffer strip, Defiance has showed a similar algal bloom to Fulton all three years. However, Fulton has been the site with the most significant algal bloom. In 1999 water levels fluctuated in Defiance because of monitoring device construction and they fluctuated in Fulton because of drought conditions. Water levels at Fulton did not fluctuate as much as they did in Defiance in 2003. In 2003, it appeared that water levels fluctuated at Defiance because of management practices or a lack of consistent attention to water level.

The encroachment of cattails may not be a good thing because over time cattails build soil and will eventually turn the pond into a cattail marsh. The finding of three species of common, hardy and truly "bait" minnows is not a good thing for Defiance. These fish species thrive in disturbed areas and almost any ditch in Northwest Ohio. They are not associated with native wetlands and will likely have a negative impact on amphibian species, odonate species, and possibly some other native wetland species.

RECOMMENDATIONS

1. Buffer strips for wildlife and habitat should be as wide as the agricultural interests can allow. A minimum of 100 feet should be maintained. This increased buffer zone width on the south side of the Fulton site, and the west and east sides of the Defiance site would be helpful in reducing the amount of chemical contamination of the wetlands.
2. Water level at the Fulton site was not a wildlife problem. However, at the Defiance site water level was dropped too low. **The critical factor in maintaining aquatic and semi-aquatic wildlife is to not let any part of the wetland completely dry out.** This would mean keeping 2 - 3 feet in the deeper areas so that a few inches could be kept over the benthic habitat of shallow areas.
3. Chemical contamination of all kinds, particularly herbicides and pesticides, should be reduced around the wetlands if they are truly going to be Northwest Ohio native wetlands. Fertilizers are responsible for the algal blooms and will be retarding factors for healthy indigenous wetland development.
4. Best management practices for native wetland habitat would be those that are the least intrusive. Maintaining some water across the benthic zone, and maintaining a wide buffer strip would be the best management strategies.
5. At this point in time, the question needs to be asked, are ponds or cattail marshes most desired? As the wetlands mature, if ponds are desired, dredging and some specific herbicide control of the cattails will become necessary.
6. At both sites, the depth for good native fish species is a problem and more likely, there will be minnow types that are not associated with native wetlands. The Defiance Wetland promises to be an interesting native Ohio wetland, but with the presence of three new common and hardy minnow species, electroshocking, and maybe even careful draining of this wetland would be merited in the future.

APPENDIX I

Master species List 2003

	DEFIANCE FULTON BOTH SITES		
	2003	2003	2003
Annelids			
<i>Eropbdella sp.</i>		x	
<i>Mysogbdella sp.</i>	x		
oligochaetes	x	x	x
Molluscs			
<i>Heliosoma sp.</i>	x	x	x
<i>Stagnicola sp.</i>	x		
<i>Physella sp.</i>	x	x	x
<i>Cambarus sp.</i>		x	
<i>Hyalrella sp.</i>	x		
<i>Lirceus sp.</i>	x		
<i>Trachelipus sp.</i>	x		
Odonates			
<i>Anax junius</i>	x	x	x
<i>Argia sp.</i>	x	x	x
<i>Enallagma civile</i>	x	x	x
<i>Enallagma sp.</i>	x	x	x
<i>E. simplicicollis</i>	x		
<i>Ischnura verticalis</i>	x	x	x
<i>Ischnura pasita</i>	x	x	x
<i>Lestes eurinus</i>	x		
<i>Lestes sp.</i>	x	x	
<i>Lestes rectangularis</i>	x	x	
<i>Libellula sp.</i>	x	x	
<i>Libellula luctuosa</i>	x	x	x
<i>Libellula pulchella</i>	x	x	x
<i>Plathemis lydia</i>	x		
<i>Pachydiplax longipennis</i>	x		
<i>Perithemis tenera</i>	x		
<i>Sympetrum sp.</i>	x	x	x
<i>Sympetrum rubicindulum</i>	x		
<i>Tramea lacerata</i>	x	x	x
Mayflies			
<i>Caenis sp.</i>	x		
<i>Heptagenia sp.</i>	x		
Water Strider			
<i>Gerris sp</i>	x	x	x

	DEFIANCE FULTON BOTH SITES		
	2003	2003	2003
Water Boatman			
<i>Corixida sp.</i>	x	x	x
<i>Arctocorixa sp.</i>	x		
Back Swimmer			
<i>Notonecta sp.</i>	x	x	x
Aquatic Collembola			
<i>Podura sp.</i>	x	x	x
Homopteran			
<i>Lethocerus americanus</i>	x		
Hydractinia			
aquatic mite	x		
Diperans			
<i>Crictopus sp.</i>	x		
<i>Chironomus spp.</i>	x	x	x
<i>Odontomyia sp.</i>	x		
<i>Tipula sp.</i>	x	x	
<i>Sialis americanis</i>		x	
Coleopterans			
<i>Copelatus glyphicus</i>		x	
<i>Berosus sp.</i>		x	
adult dyticide sp. A	x		
dyticide larvae sp b	x		
adult dyticide sp c	x		
<i>Dineutis sp.</i>		x	
<i>Rhantus sp.</i>		x	
<i>Enochus sp.</i>		x	
<i>Halipus sp.</i>	x	x	x
<i>Peltodytes sp.</i>	x	x	x
<i>Lacophilus sp a</i>	x		
<i>Lacophilus sp b</i>	x		

	DEFIANCE FULTON BOTH SITES		
	2003	2003	2003
Zooplankton			
<i>Acanthocyclops brevispinosus</i>	x		
Calenoida			
<i>Crictopus sp.</i>	x		
Chonchostraca		x	
<i>Culex sp.</i>		x	
Hydrachnellae		x	
<i>Microcyclops varicans rubellus</i>	x	x	x
Oligochaetes	x	x	
Ostracoda	x	x	x
Rotifera	x	x	
Cladocerans			
<i>Sida sp.</i>		x	
<i>Ceratodaphnia sp.</i>	x		
Amphibians			
<i>Acris crepitans blanchardii</i>	x		
<i>Rana clamitans melanota</i>	x	x	x
<i>Bufo americanis</i>	x	x	x
<i>Hyla versicolor</i>	x		
<i>Rana catesbiana</i>	x		
Reptiles			
Painted turtle	x		
Snapping turtle		x	
Fish			
<i>Lepomis sp</i>		x	
Notropus sp. A	x	x	x
Notropus sp b	x		
<i>Pimephales sp.</i>	x		
Mammal evidence			
deer	x		
racoon	x	x	x
groundhog	x		
meadowvole	x	x	x
eastern cottontail	x		

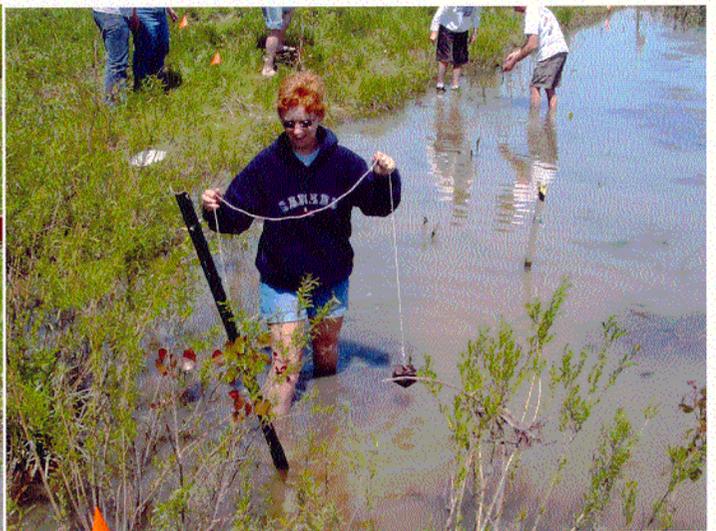
	DEFIANCE	FULTON	BOTH SITES
	2003	2003	2003

Birds			
american crow	x		
american goldfinch	x	x	x
american robin	x		
barn swallow	x	x	x
baltimore oriole	x		
common grackle		x	
european starling	x	x	x
cedar waxwing	x	x	x
eastern meadowlark	x		
eastern wood pewee	x		
great blue heron		x	
green heron	x	x	x
horned lark	x	x	x
house wren	x	x	x
indigo bunting	x	x	x
killdeer	x	x	x
house (English) sparrow	x		
house finch	x		
lesser yellowlegs	x		
mallard	x	x	x
mourning dove	x	x	x
northern cardinal	x		
red-bellied woodpecker	x		
red-tailed hawk	x		
red-winged blackbird	x	x	x
ring-billed gull	x		
ruby-throated hummingbird	x		
savannah sparrow	x		
song sparrow	x		
tree swallow	x		
tufted titmouse	x		
turkey vultufe	x		
white-breasted nuthatch	x		
ring-necked pheasant		x	
spotted sandpiper		x	
tree swallow		x	
vesper sprrow		x	

APPENDIX II



Defiance Co. wetlands May 2003



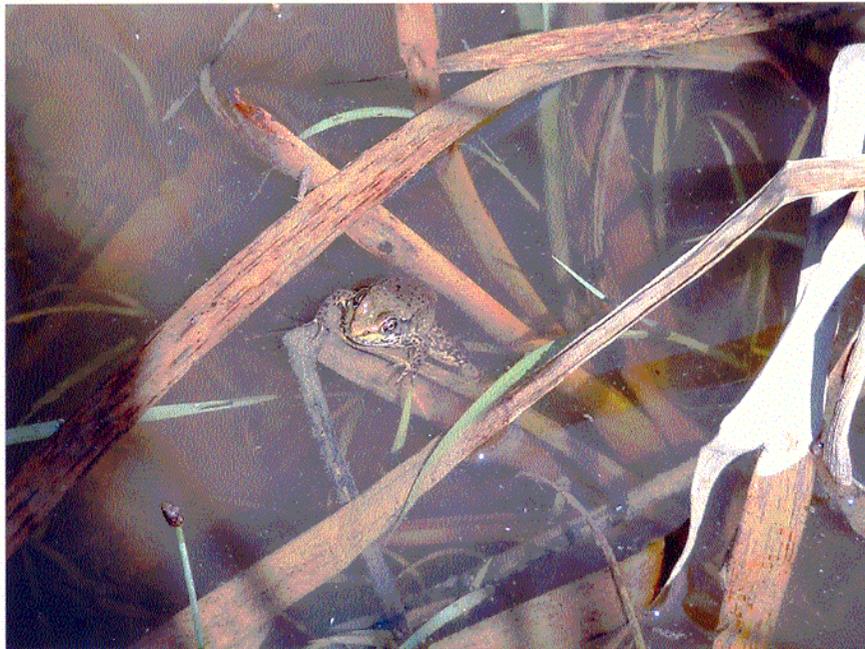


Defiance Co. wetlands June 2003



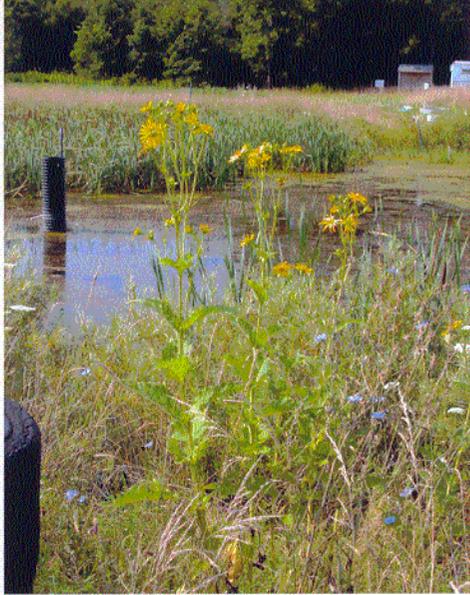


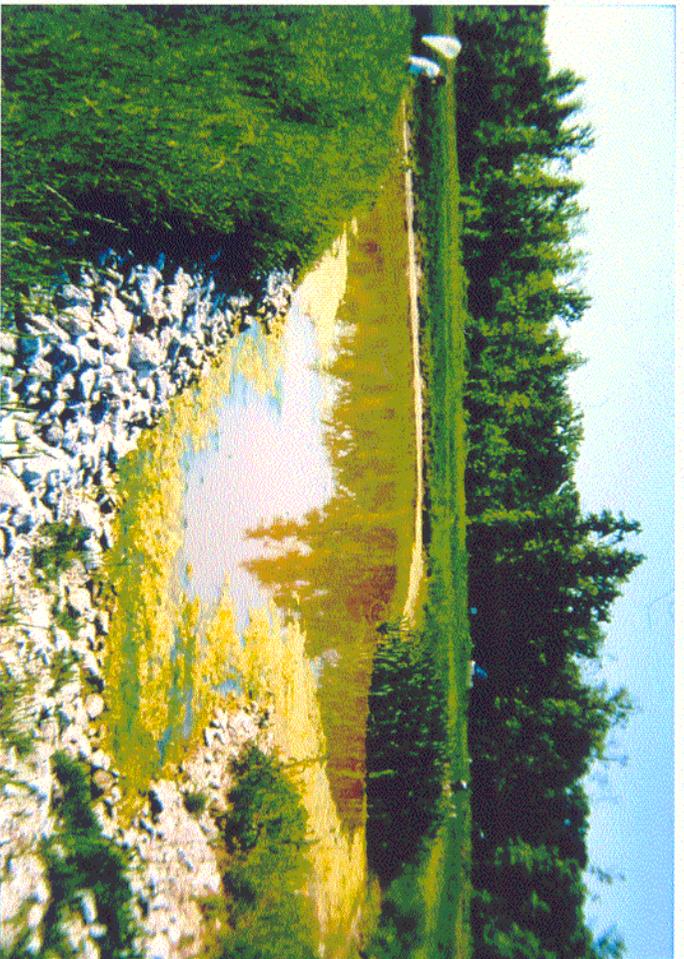
Defiance Co. Wetlands July 2003





Defiance Co. wetlands Aug. 2003





Defiance Co.
wetlands
Oct. 1998





Fulton Co. wetlands Aug. 2003



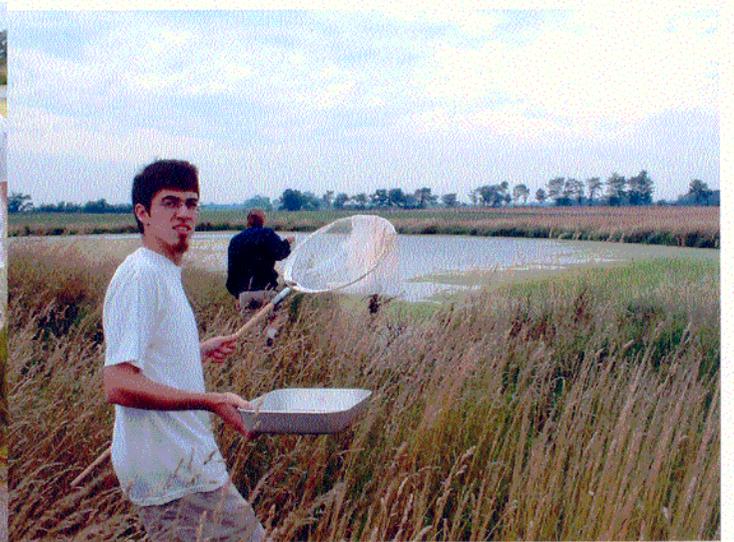


Fulton Co. wetlands Sept. 2003



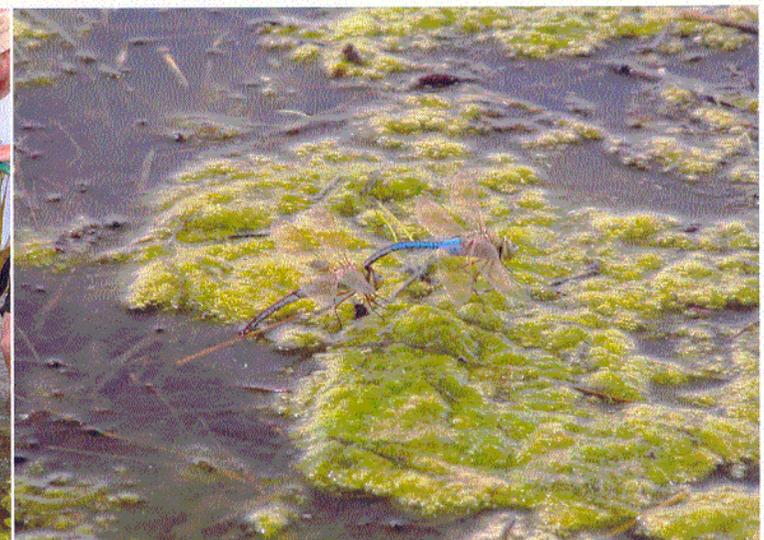
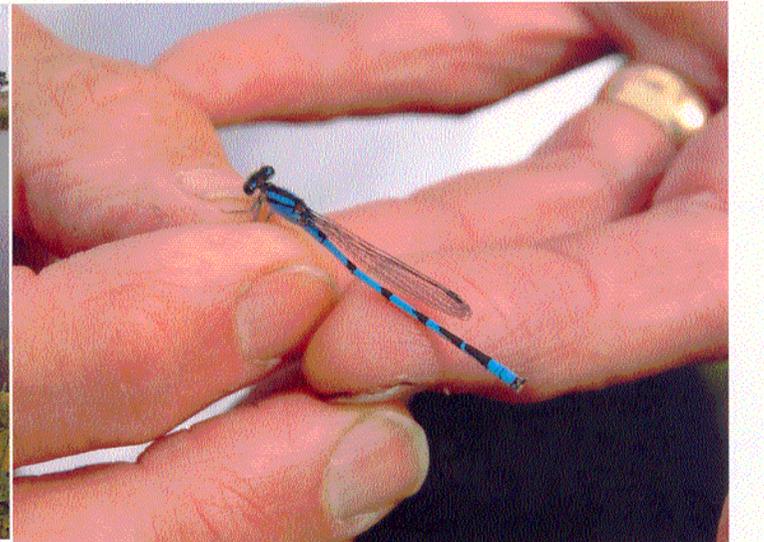


Fulton Co. wetlands July 2003





Fulton Co. wetlands June 2003





Fulton Co. wetlands
Oct. 1998

